Lectotypification for *Wisteria fallax* (Fossil Leguminosae) from the Neogene of Japan

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ABSTRACT. Lectotypification for a legume fossil species, *Wisteria fallax* (Nathorst) Tanai & Onoe from the Neogene of Japan, is presented here. A figure previously designated as the lectotype for *W. fallax* by Tanai is not tenable because the ICBN (St. Louis Code, Art. 8.5 and 9.13) does not allow a figure to serve as the type for the name of a fossil taxon.

Key words: Legume fossil, Leguminosae, Neogene, *Wisteria*.

Nathorst (1883) described four specimens of problematic legume fossil leaflets as *Sophora* (?) *fallax* from the Late Pliocene Mogi flora of Japan, but he did not cite specimens in the protologue. Tanai and Onoe (1961) transferred Nathorst's species to another legume genus, i.e., *Wistaria fallax* (Nathorst) Tanai & Onoe, based upon additional leaflet specimens from the Mio-Pliocene "Hoki flora" of Japan and designated one holotype (GSJ 4165, Geological Survey of Japan) and four paratypes (GSJ 4166, GSJ 4167, GSJ 4168, and GSJ 4169) for this new combination. However, the type designation was incorrect because it was not done on the basis of Nathorst's (1883) original specimens. Tanai (1976) re-investigated Nathorst's specimens deposited at the Swedish Museum of Natural History (S) and designated a figure (Nathorst, 1883: plate 10, fig. 12) as a lectotype for *W. fallax*, because there were no specimen numbers attached at that time. Meanwhile, Tanai drew an illustration (Tanai, 1976: 327, text-fig. 5f; in this paper: Fig. 1C) to show the partial leaflet architectural detail of the specimen in the figure designated as the lectotype. However, the illustration actually corresponded to another figure (Nathorst, 1883: plate 10, fig. 11). Nathorst's (1883) figures 11 and 12 respectively represent part and counterpart of the same specimen (Fig. 1A, D). Under such circumstances, the figure designated by Tanai (1976) may not be selected as the type because the *International Code of Botanical Nomenclature* (St. Louis Code, Art. 8.5 and 9.13, Greuter et al., 2000) does not allow a figure to serve as the type for the name of a fossil taxon. Thus, the figure designated as the lectotype and the illustration drawn by Tanai (1976) should correctly correspond to a specimen. In recent years, the electronic registration of the fossil plant collections, especially from the Cenozoic, at the Swedish Museum of Natural History is being completed gradually, and Nathorst's (1883) original specimens described as *Sophora* (?) *fallax*, including the lectotype selected here, have been given registered numbers (Fig. 1A, D). Therefore, it is high time to make a lectotypification for *Wisteria fallax*.

Wisteria fallax (Nathorst) Tanai & Onoe, Geol. Surv. Jap. Rep. 187: 45, 1961, as "*Wistaria fallax*." Basionym: *Sophora* (?) *fallax* Nathorst, Kongl. Svensk. Vet.-Akad. Handl. 20(2): 58, pl. 10, fig. 11. 1883. TYPE: Japan. Kyushu: Nagasaki City, Mogi, Late Pliocene, Mogi Formation in the northern coastal area of Mogi-machi E of Nagasaki City, 1879, *A. E. Nordenskiöld*, *S113034a* (lectotype, designated here, S; duplicate, *S113034b*, S (fossil part and counterpart)). Figure 1.

Leaflets narrow-ovate in shape, 4.3–6 × 1.8–2.6 cm; petiolule ca. 2–3 mm; apex acuminate or acute; base symmetrical or slightly asymmetrical, obtuse or rounded; midvein stout, straight; secondary veins slender, rarely branched, 7 to 10 pairs, brachidodromous, spacing and angle of divergence variable, 45°–70° at base, 50°–80° in middle, and 60°–80° at apex; vein course sinuous, slightly zigzag or curved; intersecondary veins 4 to 6, often including 1 basal pair, 1/3–1/2 (or more) distance from midvein to margin; tertiary veins random reticulate with some alternate percurrent, sinuous, simple or forked; quarternary veins polygonal; fifth and higher order venations indistinct; marginal ultimate veins forming 1 or 2 series of loops, the outer one very close to margin; margin entire; texture seemingly membranaceous; cuticle unavailable.

Wisteria fallax is a common leaflet fossil from the Neogene (specifically, middle Miocene to late Pliocene) of Japan (Tanai, 1961, 1976; Uemura,

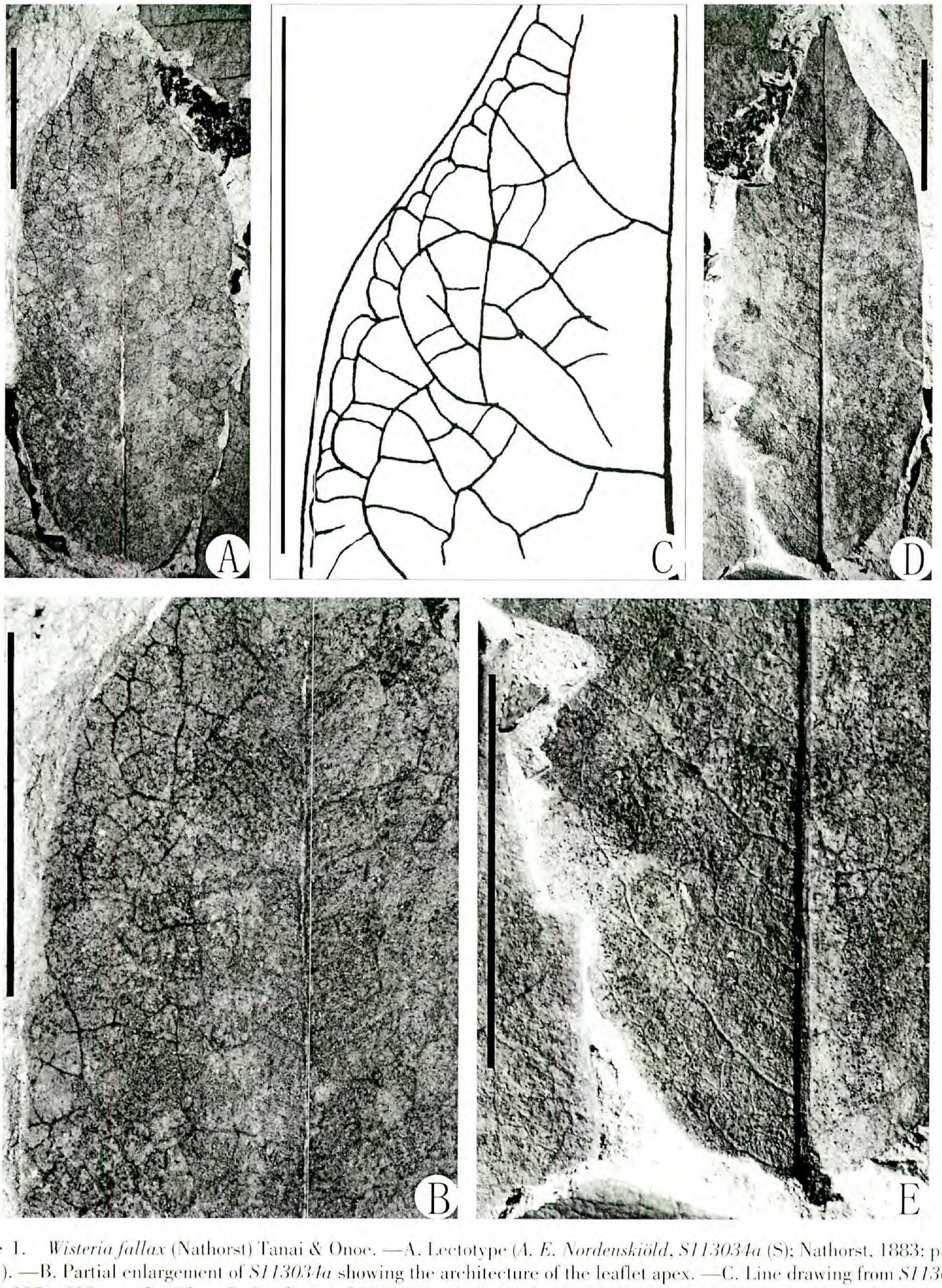

Figure 1. *Wisteria fallax* (Nathorst) Tanai & Onoe. —A. Lectotype (*A. E. Nordenskiöld, S113034a* (S); Nathorst, 1883: pl. 10, fig. 11). —B. Partial enlargement of *S113034a* showing the architecture of the leaflet apex. —C. Line drawing from *S113034a* (Tanai, 1976: 327, text-fig. 5f). —D. Duplicate of *S113034a* (*A. E. Nordenskiöld, S113034b* (S); Nathorst, 1883: pl. 10, fig. 12). —E. Partial enlargement of *S113034b* showing the architecture of the leaflet base. Scale bars = 1 cm. Note that A and D represent part and counterpart of the same specimen.

1988), and some coeval fruit fossils were also included in this taxon (Tanai & Onoe, 1961; Tanai, 1961). These fruit fossils were reported from the Miocene Jōban coal field (Tanai & Onoe, 1959) and the Pliocene Stegodon beds (Miki, 1937) in Japan. Recently, nomenclatural notes on *W. fallax* and related taxa have been given by Wang et al. (2006), who suggested that the taxonomy of the fruit fossils previously included in *W. fallax* should be reconsidered. Because there is not sufficient evidence to warrant these detached leaflets and fruits from various localities to be placed in the same taxon, the present

author suggests that *W. fallax* should be used only for leaflet fossils.

Additional specimens examined. JAPAN. **Kyushu:** Nagasaki City, Mogi, Late Pliocene, Mogi Formation in the northern coastal area of Mogi-machi E of Nagasaki City, 1879, *A. E. Nordenskiöld, S113036, S113037* (S).

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